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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/758,155	01/12/2001	Masahiro Kazayama	0649-0770P	8919
2292	7590	05/31/2005	EXAMINER	
BIRCH STEWART KOLASCH & BIRCH			HUNG, YUBIN	
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FALLS CHURCH, VA 22040-0747			2625	

DATE MAILED: 05/31/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.		Applicant(s)	
	09/758,155		KAZAYAMA ET AL.	
	Examiner		Art Unit	
	Yubin Hung		2625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 April 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2 and 4-9 is/are rejected.
- 7) ☒ Claim(s) 3 and 10-15 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 January 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Response to Arguments

1. This action is in response to amendment filed April 25, 2005.
2. Claims 1-15, of which 10-15 are new, are still pending.
3. Applicant's arguments filed April 25, 2005 have been fully considered but they are not persuasive. See below.
4. **In remarks Applicant argued in substance:**
 - 4.1 *that Koto fails to disclose that image feature amount is extracted from a moving image not encoded (because) Applicant disagree with Examiner's assertion that scene change detector 24 is analogous to preprocessing, the reason being that since a random access point is checked after the start of encoding, detector section 24 cannot be performing a preprocessing step (see the 3rd paragraph of p. 7 through the 1st paragraph of p. 8)*

However, The argument is based on a wrong reading of Koto. In Koto, a group of pictures (GOP) usually is set at a predetermined interval [Col. 5, lines 60-63].

However, if the next GOP to be encoded contains a frame designated as an access point, then the current GOP is extended to include additional frames up to

but not including the access point [Figs. 6A-6F; Fig. 7, refs. S2 & S3; Col. 10, lines 15-37]. Therefore, clearly a separate process has already being executed to designate the access point *before* the start of the encoding of the (to-be-extended) GOP the frame corresponding to the access point belongs to. Therefore, the access point designation (i.e., scene change detection, which involves inter-frame feature extraction) is done based on not-yet-coded moving frames. In other words, it is a preprocessing (with respect to encoding) that is performed, if not prior to the beginning of the encoding of the entire video stream, then at least prior to the start of the encoding of each GOP.

Rejections from Office Action Mailed 01/06/2005

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 1, 6, 7 and 9 are rejected under 35 U.S.C. 102(e) as being anticipated by Koto (US 6,463,101).

7. Regarding claim 1, similarly for claims 7 and 9, Koto discloses

an encoding preprocessing portion for extracting the amount of image feature from a moving image not encoded and sorting each of frames constructing the moving image in order of the encoding, wherein the amount of image feature is extracted on an inter-frame basis
[Fig. 2, refs. 11 (sorting) & 24 (preprocessing); Col. 4, line 64 – Col. 5, line 5; Col. 6, lines 13-16. Note that it is well known in the art that scene change detection is based on inter-frame features]

a control portion for setting **inter-frame** encoding parameters based on the amount of image feature extracted in the encoding preprocessing portion extracted in the encoding preprocessing portion
[Fig. 2, refs. 11, 23 (control) & 24; Col. 5, line 47 – Col. 6, line 4; Col. 6, lines 13-16. Note that the GOP structure is an inter-frame parameter]

an encoding portion for encoding the moving image whose frames are sorted by the encoding preprocessing portion, based on the encoding parameters from the control portion
[Fig. 2, refs. 12-22]

8. Regarding claim 6, Koto further discloses

divides each of the frames constructing the moving image into a plurality of regions and obtains the amount of image feature for each of the plurality of regions
[Col. 5, lines 5-7]

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 2, 4 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Koto (US 6,463,101) as applied to claims 1, 6, 7 and 9 above, and further in view

of Fernando et al. (International Conference on Image Processing, Vol. 3, 24-28 Oct. 1999, pp. 299-303) and Hurst (US 6,771,825).

11. Regarding claims 2 (and similarly claim 8) and claim 4, Koto discloses all limitations of its parent, claim 1.

Koto does not expressly disclose

(claim 2) the encoding preprocessing portion extracts the amount of image feature for detecting a dissolve interval from the moving image not encoded

(claim 2) the control portion changes settings of the encoding parameters within the dissolve interval and without the dissolve interval based on the amount of image feature extracted in the encoding preprocessing portion

(claim 4) the control portion obtains a linear differential value and a quadratic differential value of the amount of image feature acquired from the encoding preprocessing portion and determines whether there is the dissolve interval or not according to the linear differential value and the quadratic differential value

However, Hurst teaches the detection of a dissolve interval [Col. 3, lines 2-3] and to code the frames inside and outside the dissolve interval differently [Col. 2, lines 30-44].

In addition, Fernando further teaches the detection of dissolve using features comprising the 1st derivative (i.e., linear differential value) and the 2nd derivative (i.e., quadratic differential value) of the variance (another image feature) of an image frame [P. 300, Sect. 3.1, lines 1-15].

Koto, Hurst and Fernando are combinable because they all have aspects that are from the same field of endeavor of video processing.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the invention of Koto with the teachings of Hurst and Fernando by extracting a linear differential value and a quadratic differential value for detecting dissolve and coding the inside-dissolve-interval and the outside-dissolve-interval frames differently. The motivation would have been because during the fading/dissolving period the mean and the variance of an image frame exhibit a linear and a quadratic behavior, respectively, as pointed out by Fernando [P.300, Sect. 3., lines 1-2]. In addition, by coding the frames differently (based on whether they are inside or outside a dissolve interval) the coding results can be improved both in terms of bit rate and video quality, as pointed out by Hurst in the last 5 lines of the abstract.

Therefore, it would have been obvious to combine Hurst and Fernando with Koto to obtain the inventions as specified in claims 2, 4 and 8.

12. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Koto (US 6,463,101) as applied to claims 1, 6, 7 and 9 above, further in view of Mutoh et al. (6,631,210).

13. Regarding claim 5, Koto discloses all limitations of its parent, claim 1.

Koto does not expressly disclose

extracts the amount of image feature for each signal component of each of the frames
constructing the moving image

However, Mutoh et al. teaches the extraction of various features from the each of the C, M, and Y components (i.e., signal components) [Fig. 19; Col. 30, lines 23-29].

Koto and Mutoh are combinable because they have aspects that are from the same field of endeavor of feature detection/extraction.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Koto with the teaching of Mutoh by extracting image features for each of the image components. The motivation would have been to improve the accuracy of any subsequent processing as afforded by the redundancy inherent in multiple data source (i.e., different image components).

Therefore, it would have been obvious to combine Mutoh with Koto to obtain the invention as specified in claim 5.

Allowable Subject Matter

14. Claim 3 and 10-15 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

15. The following is a statement of reasons for the indication of allowable subject matter:

16. Regarding claim 3, the prior art of record fails to teach or suggest, alone or in combination, a moving image encoding apparatus comprising, along with other limitations:

the control portion sets the encoding parameters so that a distance between an intra coded picture and a neighboring predictive coded picture is 2, and a distance between nearest neighboring two predictive coded pictures is also 2 when the encoding portion encodes the frames of the dissolve interval based on the amount of image feature extracted in the encoding preprocessing portion

Closest art of record Watanabe et al. (US 5,894,526) discloses setting the initial inter-frame distance between a reference frame and a predicted frame to two and subsequently adjusting this distance depending on the size of the accumulated differential. [See Fig. 5.] However, it does not set the distance to 2 whenever the frame is in a dissolve interval, regardless of the corresponding accumulated differential.

17. Regarding claims 10 and 11, and similarly claims 12-15, the prior art of record fails to teach or suggest, alone or in combination, a moving image encoding apparatus comprising, along with other limitations:

Wherein the interframe encoding parameters are set to decrease

(claim 10) a distance between an I-picture and a neighboring P-picture and

(claim 11) a distance between a nearest neighboring two P-pictures

Closest art of record Watanabe et al. (US 5,894,526) discloses reducing the distance between a reference frame (i.e., I-frame) and a predicted frame (i.e., P-frame) when a condition is met [Fig. 5, refs. S5, S8 & S9. Note: Since it is well known in the art that the numbers of B-pictures between an I-frame and a P-frame and between two successive P-frames are typically the same, the decrease in one distance implies a corresponding decrease in the other]. However, it does not teach that the distance is decrease **regardless of the condition** (e.g., the amount of the extracted feature recited in claim 1).

Conclusion and Contact Information

18. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

19. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yubin Hung whose telephone number is (571) 272-7451. The examiner can normally be reached on 7:30 - 4:00.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bhavesh Mehta can be reached on (571) 272-7453. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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Art Unit: 2625

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Yubin Hung
Patent Examiner
May 16, 2005



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